

Applic. No. 10/022,226

Amdt. dated May 28, 2004

Reply to Office action of March 3, 2004

Claim Amendments

Claim 1 (currently amended): An electronic component,  
comprising:

an electronic circuit having a first surface;

electrical contacts at least on said first surface for  
electrical bonding of said electronic circuit;

at least one elevation disposed on said first surface, said at  
least one elevation having an elevation surface and a contact  
zone, said at least one elevation being formed of an  
insulating material having sufficient flexibility to absorb  
stresses occurring in said contact zone as a result of at  
least one of the group consisting of thermal loading and  
mechanical loading, and said at least one elevation having a  
geometrical shape for achieving a spring effect in directions  
extending parallel to said first surface;

at least one of said electrical contacts disposed on said at  
least one elevation; and

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a conduction path disposed on said elevation surface between said at least one of said electrical contacts and said electronic circuit.

Claim 2 (original): The electronic component according to claim 1, including:

an insulating layer at least partially covering said first surface and adjoining said at least one elevation; and

conductor runs disposed on said insulating layer and forming a conducting connection between said at least one elevation and said electronic circuit.

Claim 3 (original): The electronic component according to claim 2, wherein said insulating layer at least partially covers said at least one elevation.

Claim 4 (original): The electronic component according to claim 3, wherein said insulating layer is elastic.

Claim 5 (original): The electronic component according to claim 1, wherein the electronic component is a semiconductor component.

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Claim 6 (original): The electronic component according to claim 5, wherein the electronic component is a polymer component.

Claim 7 (original): The electronic component according to claim 1, wherein at least one of said electrical contacts is formed by one of the group consisting of a conducting layer, a conducting pin, and a conducting ball.

Claim 8 (original): An electronic component, comprising:

an electronic circuit having a first surface;

electrical contacts at least on said first surface for electrical bonding of said electronic circuit;

at least one elevation disposed on said first surface, said at least one elevation having a contact zone and an interior, said at least one elevation being formed of an insulating material having sufficient flexibility to absorb stresses occurring in said contact zone as a result of at least one of the group consisting of thermal loading and mechanical loading;

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at least one of said electrical contacts disposed on said at least one elevation; and

a conduction path disposed in said interior between said at least one of said electrical contacts and said electronic circuit.

Claim 9 (original): The electronic component according to claim 8, including:

an insulating layer at least partially covering said first surface and adjoining said at least one elevation; and

conductor runs disposed on said insulating layer and forming a conducting connection between said at least one elevation and said electronic circuit.

Claim 10 (original): The electronic component according to claim 9, wherein said insulating layer at least partially covers said at least one elevation.

Claim 11 (original): The electronic component according to claim 10, wherein said insulating layer is elastic.

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Claim 12 (original): The electronic component according to claim 8, wherein the electronic component is a semiconductor component.

Claim 13 (original): The electronic component according to claim 12, wherein the electronic component is a polymer component.

Claim 14 (original): The electronic component according to claim 8, wherein at least one of said electrical contacts is formed by one of the group consisting of a conducting layer, a conducting pin, and a conducting ball.

Claim 15 (withdrawn): A method of producing an electronic component, which comprises:

providing an electronic component having:

an electronic circuit with a first surface; and

electrical contacts at least on the first surface for electrical bonding of the electronic circuit;

forming at least one elevation on the first surface by one of the group consisting of applying the elevation with a pressure

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process, injection molding the elevation, and injection-compression molding the elevation, the elevation having an elevation surface and a contact zone, the elevation being of an insulating material having sufficient flexibility to absorb stresses occurring in the contact zone as a result of at least one of the group consisting of thermal loading and mechanical loading;

providing at least one of the electrical contacts on the elevation; and

providing a conduction path on the elevation surface between the at least one of the electrical contacts and the electronic circuit.

Claim 16 (withdrawn): The method according to claim 15, wherein the elevation is one of the group consisting of thermoplastic material and thermosetting material.

Claim 17 (withdrawn): The method according to claim 15, which further comprises roughening the elevation surface after the elevation has been applied, at least in a region of the later-produced conduction path.

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Claim 18 (withdrawn): The method according to claim 17, which further comprises carrying out the roughening step with a laser.

Claim 19 (withdrawn): The method according to claim 17, which further comprises depositing nuclei on the elevation surface after the elevation surface has been roughened and before a conducting material has been applied to form the conduction path on the elevation surface.

Claim 20 (withdrawn): The method according to claim 19, wherein the nuclei is palladium.

Claim 21 (withdrawn): The method according to claim 17, which further comprises carrying out the conduction path providing step by depositing a conducting material on the roughened elevation surface.

Claim 22 (withdrawn): The method according to claim 15, which further comprises:

at least partially covering the first surface with an insulating layer adjoining the elevation by applying the insulating layer with a pressure process; and

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providing conductor runs on the insulating layer to form a conducting connection between the elevation and the electronic circuit.

Claim 23 (withdrawn): The method according to claim 22, which further comprises performing the covering step by one of the group consisting of injection molding the insulating layer and injection-compression molding the insulating layer.

Claim 24 (withdrawn): The method according to claim 22, which further comprises roughening a surface of the insulating layer at least in a region of conductor runs to be formed.

Claim 25 (withdrawn): The method according to claim 24, which further comprises performing the insulating layer roughening using a laser.

Claim 26 (withdrawn): The method according to claim 24, which further comprises depositing nuclei on the surface of the insulating layer after the surface of the insulating layer has been roughened and before a conducting material has been applied to form conduction paths on the surface of the insulating layer.



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Claim 27 (withdrawn): The method according to claim 26,  
wherein the nuclei is palladium.

Claim 28 (withdrawn): A method of producing an electronic  
component, which comprises:

providing an electronic component having:

an electronic circuit with a first surface; and

electrical contacts at least on the first surface for  
electrical bonding of the electronic circuit;

forming at least one elevation on the first surface by one of  
the group consisting of applying the elevation with a pressure  
process, injection molding the elevation, and injection-  
compression molding the elevation, the elevation having an  
elevation surface and an interior, the elevation being of an  
insulating material having sufficient flexibility to absorb  
stresses occurring in the contact zone as a result of at least  
one of the group consisting of thermal loading and mechanical  
loading;

providing at least one of the electrical contacts on the  
elevation; and

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providing a conduction path in the interior of the elevation between the at least one of the electrical contacts and the electronic circuit.

Claim 29 (withdrawn): The method according to claim 28, wherein the elevation is one of the group consisting of thermoplastic material and thermosetting material.

Claim 30 (withdrawn): The method according to claim 28, which further comprises roughening the elevation surface after the elevation has been applied, at least in a region of the later-produced conduction path.

Claim 31 (withdrawn): The method according to claim 30, which further comprises carrying out the roughening step with a laser.

Claim 32 (withdrawn): The method according to claim 30, which further comprises depositing nuclei on the elevation surface after the elevation surface has been roughened and before a conducting material has been applied to form the conduction path in the interior of the elevation.

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Claim 33 (withdrawn): The method according to claim 32, wherein the nuclei is palladium.

Claim 34 (withdrawn): The method according to claim 30, which further comprises carrying out the conduction path providing step by depositing a conducting material on the roughened elevation surface.

Claim 35 (withdrawn): The method according to claim 28, which further comprises:

at least partially covering the first surface with an insulating layer adjoining the elevation by applying the insulating layer with a pressure process; and

providing conductor runs on the insulating layer to form a conducting connection between the elevation and the electronic circuit.

Claim 36 (withdrawn): The method according to claim 35, which further comprises performing the covering step by one of the group consisting of injection molding the insulating layer and injection-compression molding the insulating layer.

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Claim 37 (withdrawn): The method according to claim 35, which further comprises roughening a surface of the insulating layer at least in a region of conductor runs to be formed.

Claim 38 (withdrawn): The method according to claim 37, which further comprises carrying out the insulating layer roughening using a laser.

Claim 39 (withdrawn): The method according to claim 37, which further comprises depositing nuclei on the surface of the insulating layer after the surface of the insulating layer has been roughened and before a conducting material has been applied to form conduction paths on the surface of the insulating layer.

Claim 40 (withdrawn): The method according to claim 39, wherein the nuclei is palladium.

Claim 41 (new): The electronic component according to claim 1, wherein said elevation is taller than it is wide.

Claim 42 (new): An electronic component, comprising:

an electronic circuit having a first surface;

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electrical contacts at least on said first surface for  
electrical bonding of said electronic circuit;

at least one elevation disposed on said first surface, said at  
least one elevation having an elevation surface and a contact  
zone, said at least one elevation being formed of an  
insulating material having sufficient flexibility to absorb  
stresses occurring in said contact zone as a result of at  
least one of the group consisting of thermal loading and  
mechanical loading;

at least one of said electrical contacts disposed on said at  
least one elevation;

an insulation layer only partially covering said at least one  
elevation; and

a conduction path at least partly disposed on at least part of  
said insulating layer partially covering said at least one  
elevation between said at least one of said electrical  
contacts and said electronic circuit.

Claim 43 (new): The electronic component according to claim  
42, wherein said at least one elevation has an outwardly  
facing surface remaining free of said insulating layer.

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Claim 44 (new): The electronic component according to claim 42, wherein:

said insulating layer has rough regions;

at least one of said electrical contacts is disposed on said rough regions of said insulating layer; and

a conduction path is disposed on said rough regions of said insulating surface between said at least one of said electrical contacts and said electrical circuit.

Claim 45 (new): An electronic component, comprising:

an electronic circuit having a first surface;

electrical contacts at least on said first surface for electrical bonding of said electronic circuit;

at least one elevation disposed on said first surface, said at least one elevation including an elevation surface having rough regions and a contact zone, said at least one elevation being formed of an insulating material having sufficient flexibility to absorb stresses occurring in said contact zone

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as a result of at least one of the group consisting of thermal loading and mechanical loading;

at least one of said electrical contacts disposed on said rough regions of said elevation surface; and

a conduction path disposed on said rough regions of said elevation surface between said at least one of said electrical contacts and said electronic circuit.

Claim 46 (new): The electronic component according to claim 45, wherein said rough regions include nuclei.

Claim 47 (new): The electronic component according to claim 46, wherein the nuclei are palladium.